

ASSESSMENT OF COMMUNITY HEALTH VOLUNTEERS' KNOWLEDGE ON  
CERVICAL CANCER IN KADIBO DIVISION, KISUMU COUNTY, KENYA

BY

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## DECLARATIONS

### Student

I declare that this is an original work which has not been previously presented for any degree of Maseno University or any other institution. The work herein has all sources of information supported by relevant references.

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Above all I thank God Almighty for bringing me this far and for the gift of life.

## **DEDICATION**

This work is dedicated to my family, the Ochomos for standing with me throughout my studies.

## ABSTRACT

In sub-Saharan Africa, 34.8 new cases of cervical cancer are diagnosed per 100,000 women annually and 22.5/100,000 women die from the disease. The disease burden is higher in the developing countries with lower screening rates. Despite of the magnitude of this problem, Kenya still has a screening rate of 3.2% therefore cervical cancer prevalence has not been established. Having been shown to be effective with other health indicators and being members of the communities, community health volunteers (CHVs) can be effective in public education through community strategy approach if they have the right information; however, information on their knowledge about cervical cancer was lacking. The main objective of this study was to determine the knowledge on cervical cancer amongst CHVs in Kadibo Division, Kisumu County. Specific objectives were; to determine knowledge on the risk factors associated with cervical cancer; to determine knowledge on the signs and symptoms of cervical cancer, to determine knowledge on the availability of cervical cancer screening services at the health facilities and to determine the socio-demographic factors affecting knowledge about cervical cancer. The study was cross sectional where a saturated sample of 188 CHVs was interviewed. Participants' demographic characteristics were presented by use of median and inter-quartile range for continuous variables and percentages and frequencies for categorical variables. The knowledge of cervical cancer risk factors, signs and symptoms and availability of cervical cancer screening services were grouped based on percentage scores and presented by use of frequencies and percentages, chi-square was used to determine relationship between demographic characteristics and knowledge. Majority at 161(85.6%) were women, 47(25.0%) were aged 40-44, 91(48.4%) had primary education and were small scale farmers at 132(70.2%). Knowledge on risk factors was low, on signs and symptoms was average and on screening services was also average. Education was significant in explaining knowledge on risk factors ( $p=0.012$ ,  $\chi^2=3.839$ ) and knowledge on availability of screening services ( $p=0.011$ ,  $\chi^2=8.605$ ). Occupation was significant in explaining the knowledge on risks factors ( $p<0.0001$ ,  $\chi^2=12.722$ ), signs and symptoms ( $p=0.030$ ,  $\chi^2=15.110$ ) and knowledge on availability of screening services ( $p=0.002$ ,  $\chi^2=18.335$ ). Health centre of attachment was significant in explaining knowledge about risk factors ( $p<0.0001$ ,  $\chi^2=71.013$ ), signs and symptoms ( $p<0.0001$ ,  $\chi^2=86.472$ ) and knowledge on screening services availability ( $p<0.0001$ ,  $\chi^2=101.705$ ). The study points out the training needs of the CHVs which need to be addressed to enable them carry out effective public education about cervical cancer.

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## LIST OF ABBREVIATIONS

AIDS:	Acquired immunodeficiency syndrome
CCS:	Cervical cancer screening
CHV:	Community health volunteer
CI:	Confidence interval
DHIS:	District health information systems
FACES:	Family Aids Care and Educational Services
HIV:	Human immunodeficiency virus
HPV:	Human papillomavirus
ICC:	Invasive cervical cancer
KDHS:	Kenya demographic and health survey
KNH:	Kenyatta National Hospital
NGO:	Non-governmental organisation
SD:	Standard deviation
SGS:	School of Graduate Studies
STI:	Sexually transmitted infection
TAT:	Turn-around time
VIA:	Visual inspection with Acetic acid
VILI:	Visual inspection using Lugol's Iodine
WHO:	World Health Organization
WRA:	Women of Reproductive Age

## **OPERARIONAL DEFINITION OF TERMS**

**CHV:** Community health volunteers are members of the communities where they work selected by the communities to link them to the health facilities and are supervised by a community health extension worker.

**Disease burden:** Measure used to assess and compare the relative impact of different diseases and injuries on populations. It quantifies health loss due to disease and injury that remains after treatment, rehabilitation or prevention efforts of the health system and society generally, according to the Australian institute of health and welfare.

**Knowledge:** Information about the risk factors, signs and symptoms and the available screening services for cervical cancer in the health facilities to which the CHVs were attached.

**Pap smear:** It is a method of cervix screening to detect potentially cancerous cells in the endo-cervical canal.

**Screening:** Presumptive identification of unrecognized disease or defects by the application of tests, examinations, or other procedures that can be applied rapidly.

**Turn-around time:** Amount of time it takes for a client to get the screening results after getting into the screening service delivery point.

**Women of reproductive age:** Women of the ages between 15 and 49 as defined by WHO.

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## CHAPTER ONE: INTRODUCTION

### 1.1 Background Information

Globally, cervical cancer is the fourth most frequent cancer in women with an estimated 530 000 new cases in 2012 representing 7.5% of all female cancer deaths. Of the estimated more than 270 000 deaths from cervical cancer every year, more than 85% of these occur in less developed regions. In developed countries, programs are in place which enables women to get screened, making most pre-cancerous lesions identifiable at stages when they can easily be treated. Early treatment prevents up to 80% of cervical cancers in these countries (WHO, 2006). In the developing countries, cervical cancer is the second most common cancer with an estimated 445 000 new cases in 2012 (84% of the new cases worldwide) (WHO, 2016). Furthermore, it was estimated that, 95% of women in developing countries had never been screened for cervical cancer mainly due to lack of awareness amongst the population (WHO, 2006). This underscores the need for public education which is undertaken by the community health volunteers (CHVs) under the community strategy arrangement.

In sub-Saharan Africa, 34.8 new cases of cervical cancer are diagnosed per 100,000 women annually, and 22.5/100,000 women die from the disease, making it the second most common cancer after breast cancer (Ferlay *et al.*, 2012). The disease burden is significantly higher in the developing countries with lower screening rates; largely due to lack of screening that allows detection of pre-cancerous and early stage cervical cancer. Data from hospital-based registries in Kenya indicated that cancer of the cervix accounts for 70-80% of all cancers of the genital tract (GoK, 2015). Despite the magnitude of the problem in Kenya and the fact that it is easily preventable, cervical cancer screening coverage in Kenya for all women aged 18 to 69 years is only 3.2% against a target of 70% coverage. In Kisumu County, only 2% of the women of

reproductive age (WRA) were screened with Kadibo Division recording just 1.5% screening rate in 2013 (FACES, 2014). The Family AIDS Care and Education Services (FACES) program, a local NGO, was initiated and is supporting training and mentorship of healthcare workers on cervical cancer screening in various health facilities in Kisumu County (Huchko *et al.*, 2011) but the uptake of screening has been poor due to inadequate knowledge by the general population (Rosser *et al.*, 2015a). This trend requires public education to reverse and improve screening in order to identify those at risk of cervical cancer and to establish the prevalence of cervical cancer.

Furthermore, data from the 2014 Kenya Demographic and Health Survey (KDHS), indicates that only 14% of women aged 15-49 years have ever had a cervical exam (KNBS, 2015). The women therefore need to be enlightened about cervical cancer to create an enhanced need for screening. Use of CHVs has been shown to be effective in passing health information (Wangalwa *et al.*, 2012), however, their ability to create demand for the screening services depend largely on their ability to pass the right information to the community members.

Enlightened women, who have access to information about their health and are able to make informed decisions have been shown to be more likely to seek cervical cancer screening (Coronado Interis *et al.*, 2015; Shakya *et al.*, 2016), while a high level of knowledge about cervical cancer was found to be a key predictor of screening intent (Rosser *et al.*, 2015b). To enhance cervical cancer screening and early detection, it is important that the women access the most critical information including the risk factors, signs and symptoms and where the screening services can be accessed (Wongwatcharanukul *et al.*, 2014).

According to WHO, a risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury (WHO, 2006). Some examples of the

risk factors for cervical cancer are early onset of sexual activity, HPV infection, smoking and immune-suppression (Bosch *et al.*, 2006). Prevention and control of disease and injury require information about the leading medical causes of illness and exposures or risk factors. This creates a focus on areas which can be changed or avoided rather than those which cannot be changed (Mohanty and Ghosh, 2014). Those exposed to the risk factors that cannot be changed can also go for early and regular check-ups. Knowledge about the risk factors is therefore a very important component of disease prevention and control. With the right information, the community members will be able to determine whether they are at risk or not and hence seek cervical cancer screening services accordingly. In Kadibo Division, despite the fact that information about the risk factors to cervical cancer is easily available to CHVs, information about the knowledge about risk factors of cervical cancer in women of reproductive age was lacking amongst them. As such, the current study assessed the knowledge among the community health volunteers on the risk factors associated with cervical cancer in Kadibo Division, Kisumu County, Kenya.

Disease manifestation is very important in its diagnosis, management and treatment (Maree and Kaila, 2014) therefore, health service providers must know the right signs and symptoms to look for in order to give the right and timely medical attention for any disease in order to curb the development and spread of the disease. The right information can also be passed to the public to enable them seek timely medical attention on noticing such signs (Fylan, 1998; Can *et al.*, 2014; Driscoll, 2015). The most appropriate channel to pass this information is through the community gatekeepers, the CHVs. Having the right information regarding signs and symptoms of cervical cancer in the community create demand for the available screening services at the health facilities and enhance screening to establish the cervical cancer prevalence rate. The information

regarding knowledge on the signs and symptoms of cervical cancer among community health volunteers in Kadibo Division, Kisumu County remains undetermined. Therefore, the current study set out to assess the knowledge on the signs and symptoms of cervical cancer among community health volunteers in Kadibo Division, Kisumu County.

The knowledge about the availability of medical services determines how the society embraces and utilizes such services (Williams *et al.*, 2013). It is important to have medical services available and accessible to the community in order to promote prevention, management and cure of medical conditions (Kantelhardt *et al.*, 2014). An informed community will create demand for the available screening services and in turn enable establishment of cervical cancer prevalence rate. This information on the available screening services, cost and duration of screening is usually passed to the community members by the CHVs. However, the information on the CHVs' knowledge on the availability of cervical cancer screening services in Kadibo Division, Kisumu County remains unknown. As such, the current study assessed the knowledge on the availability of cervical cancer screening services among community health volunteers in Kadibo Division, Kisumu County.

Finally, the knowledge of an individual is influenced by various factors, which act as a system on various specific issues to have a net effect on an individual's general knowledge. These factors are collectively summed as socio-demographic factors and include indicators like gender, age, education level, religion, marital status and occupation. The effect of these socio-demographic factors on the knowledge of the CHVs about cervical cancer screening remained unknown in Kadibo Division, Kisumu County. As such, the current study determined the socio-demographic factors influencing the knowledge of the CHVs on cervical cancer.

## **1.2 Statement of the Problem**

Cervical cancer is the second most frequent cancer among women in Kenya and the leading cause of cancer deaths in women of reproductive age (WRA). According to the national cervical cancer prevention program, the estimated annual number of cervical cancer cases is 2454 while the annual number of deaths due to cervical cancer is 1676 in Kenya. This is projected to rise to 4261 new cases and 2955 deaths annually by 2025. Despite the magnitude of the problem, screening rates are still low thereby the prevalence of cervical cancer in this population remains un-established. Use of CHVs through the community strategy approach has been shown to be effective in passing health information and improving uptake of medical services.

The CHVs' reporting tool (MOH 514) requires them to report on the number of clients referred for cervical cancer screening among other health indicators. This means that the CHVs are required to create demand for the screening services in the community after training. According to the CHVs' training curriculum (GoK, 2014), the CHVs are required to know the basic information regarding cervical cancer which include knowledge on the risk factors, signs and symptoms and the available screening services to pass to the community. There is, however, no information on post-training assessment of the CHVs' knowledge on cervical cancer. The current study was designed to assess the CHV's knowledge on the risk factors, signs and symptoms and the available screening services that they can pass to the community. It was anticipated that this would help improve cervical cancer screening rates and thereby enable establishment of cervical cancer prevalence rate.

## **1.3 Objectives of the Study**

### **1.3.1 General Objective**

The study aimed at assessing the community health volunteers' knowledge on cervical cancer in Kadibo Division, Kisumu County, Kenya.

### **1.3.2 Specific Objectives**

1. To assess the knowledge on the risk factors associated with cervical cancer amongst community health volunteers in Kadibo Division, Kisumu County, Kenya.
2. To assess the knowledge on the signs and symptoms of cervical cancer amongst community health volunteers in Kadibo Division, Kisumu County, Kenya.
3. To assess the knowledge on the availability of screening services at the health facilities amongst the community health volunteers' in Kadibo Division, Kisumu County, Kenya.
4. To determine the socio-demographic factors affecting the knowledge on cervical cancer amongst community health volunteers in Kadibo Division, Kisumu County, Kenya.

### **1.4 Research Questions**

1. How is the knowledge on the risk factors associated with cervical cancer amongst the community health volunteers in Kadibo Division, Kisumu County, Kenya?
2. How is the knowledge on signs and symptoms of cervical cancer amongst the community health volunteers in Kadibo Division, Kisumu County, Kenya?
3. How is the knowledge on the availability of screening services at the facilities amongst the community health volunteers in Kadibo Division, Kisumu County, Kenya?
4. What are the socio-demographic factors affecting the knowledge about cervical cancer amongst community health volunteers in Kadibo Division, Kisumu County, Kenya?

## **1.5 Significance of the Study**

Following the training of CHVs on a wide range of health issues during induction, there is always a critical need to gauge their knowledge on these areas as they are the gate keepers that pass information to the rest of the community members. The current study provides information on the knowledge of CHVs on risks, signs and symptoms, screening services available and the socio-demographic characteristics associated with knowledge of the CHVs. Results of this study identify the training needs of the CHVs to enable the promotion of cervical cancer screening as a component of maternal health services. Through this study, and through the CHVs, a well-informed community will be able to have access to screening, which will then allow determine the prevalence of cervical cancer, to support treatment outcomes.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Knowledge on Cervical Cancer

There has been several cross-sectional studies to describe the knowledge about cervical cancer in various set-ups with most of these studies pointing to low knowledge (Lindau *et al.*, 2002; Tarwireyi *et al.*, 2003; Anorlu, 2008; Oranratanaphan *et al.*, 2010). In a systematic review of literature using the Health Belief Model it was noted that the commonly held beliefs about cervical cancer across several cultural groups include: cancer being fatal and a death sentence, a lack of knowledge about cervical cancer and need for screening, fear of Pap smears threatening one's virginity, as well as beliefs that a Pap smear is unnecessary unless one is ill (Johnson *et al.*, 2008). This review only took into account the beliefs of the study participants and overlooked the knowledge which is necessary to make informed decisions pertaining to their health. In addition, the review did not assess the possible sources of information to the community. However, it showed that mis-information and negative beliefs hinder uptake of cervical cancer screening. As such, it concluded that it is necessary to interrogate the sources of health information in order for the community to have accurate information.

There are also beliefs that cervical screening is related to sexually transmitted infections (STI) diagnosis due to the limited understanding of female reproductive system and associated diseases (Bingham *et al.*, 2003). In Tanzania, a majority of nurses were found to have inadequate knowledge on transmission of HPV, causes, risks factors, symptoms, treatment and prevention of cervical cancer (Urasa and Darj, 2011). This study assessed the knowledge of the nurses and pointed out the training needs of the nurses emanating from the weakness in their training curriculum. The nurses, through their formal training are supposed to be well equipped to provide information on the screening services; however, they can only reach those already

seeking such services. On the other hand, those who do not have the information and are yet to seek cervical cancer screening services need the CHVs to provide them with the accurate information and create demand for cervical cancer screening. This therefore requires that the knowledge of CHVs on cervical cancer be assessed too.

In Kenya, a study done at Kenyatta National Hospital (KNH) to assess knowledge and practice about cervical cancer and Pap smear testing among cervical cancer and non-cancer patients demonstrated that fifty-one per-cent of the respondents were aware of cervical cancer while 32% knew about Pap smear testing, there is need therefore, to increase the knowledge and awareness about ICC and screening among Kenyan women to increase uptake of the currently available hospital screening facilities (Gichangi *et al.*, 2003). This study assessed the knowledge of the patients already seeking curative services but did not address issues of preventive and promotive health services, which have better outcomes as per cervical cancer management. It would therefore be prudent to extend and assess the knowledge of the general population on cervical cancer and screening services. The knowledge of the community about cervical cancer can only be assessed after the CHVs carry out public education, which is only possible, if the CHVs have the right information to pass to the community. Further, in a study to assess knowledge, attitudes, and practices regarding cervical cancer among rural women of Kenya, findings showed that 40% knew about cervical cancer, although many still lack factual information (Gatune and Nyamongo, 2005). This study assessed the knowledge of the rural women on risk factors, pointing out the need to educate women in order to scale up screening services, however, it did not assess the knowledge on the screening service options available, the cost and the duration – very key elements in determining the ability of the population to utilize the available screening

services for cervical cancer. This knowledge in the community needs to be enhanced, through engagement of the CHVs.

Generally, the knowledge about cervical cancer is low in Kenya and in the sub-Saharan Africa in general and the lack of awareness of cervical cancer and the benefits of early detection measures are critical barriers that affect women's participation in screening programs (Ngugi *et al.*, 2012). In the previous study (Ngugi *et al.*, 2012), the source of the information which would include the sensitization by the CHVs who are the primary source of health information to the community under the community strategy were never addressed. Generally, it is necessary to educate the community gate keepers to disseminate the right information to the public and improve uptake (Wongwatcharanukul *et al.*, 2014). From the previous studies above, no attempts were made to assess and train community gate keepers such as the community health volunteers. In Kadibo Division, Kisumu County, the prevalence rate of cervical cancer is unknown. In addition, the knowledge about risk factors, signs and symptoms and cervical cancer screening services among CHVs also remained unknown. As such, the current study aimed to determine the knowledge levels about cervical cancer among CHVs in Kadibo Division, Kisumu County, Kenya.

## **2.2 Knowledge on Risk Factors Associated With Cervical Cancer**

In a study to determine knowledge about cervical cancer risk factors, traditional health beliefs and Pap smear testing among Vietnamese-American women, the proportions of women who knew that older age, not getting regular Pap tests and Vietnamese ethnicity were associated with an elevated cervical cancer risk were only 53%, 62%, and 23%, respectively. The majority (87%) incorrectly believed poor women's hygiene is a risk factor for cervical cancer. Knowing that lack of Pap testing increases the risk of cervical cancer was strongly associated with recent Pap smear receipt (Do *et al.*, 2007). This study only assessed the knowledge of the women on the risk

factors and pointed out how having the right knowledge encourages cervical cancer screening while misconceptions and beliefs discourage uptake of screening services. The study did not extend to address the sources of such information. This trend was also observed in another study in Britain in which the awareness of human papillomavirus (HPV) as risk factor of cervical was assessed and shown to be only 2.5% (Marlow *et al.*, 2007). This study was able to point out the need for public education on the risk factors of cervical cancer to improve the uptake of screening services. However, the weakness of this study was on the failure to elucidate the role of CHVs in public education in the field of health.

Another study in Uganda among the medical workers suggested that less than 40% knew risk factors for cervical cancer, eligibility for and screening interval (Mutyaaba *et al.*, 2006). These findings were attributed to the weaknesses in the training curriculum, however, the training manual for the CHVs provided for training of the CHVs on the risk factors associated with cervical cancer but no post-training knowledge of the CHVs had been done. Both the general population and the medical workers are therefore not conversant with the risk factors associated with cervical cancer thereby hampering the screening efforts. A study carried out amongst the nurses and midwives in Ethiopia showed that awareness on the risk factors associated with cervical cancer was low (Kress *et al.*, 2015), due to lack of training on the risk factors of cervical cancer. These findings were replicated in another study carried out in Wielkopolska, Poland where knowledge about risk factors was found to be poor amongst the study participants (Gawdzik *et al.*, 2015). This study did not however assess access to such information, which is possible through the CHVs. The CHVs however, must have the right information to pass to the community. This was assessed by the current study.

Another study among the Turkish women noted that the knowledge of the women on cervical cancer risk factors (having a sexually transmitted disease, giving birth to many children, smoking, having sexual activity with a man who has had partners with a cervical cancer and having sexual intercourse at an early age) related with their condition of having Pap testing (Uysal and Birsal, 2009). This study emphasized the need for public education and involvement of health care workers who are linked to the community by the CHVs. This is in line with another study carried out in Eldoret, Kenya to determine the perceptions of risk and barriers to cervical cancer screening which noted that perception of being at risk was significantly associated with a felt need for screening (Were *et al.*, 2011). Knowledge of the risk factors is important in determining whether a woman goes for screening or not. This information is delivered by gatekeepers like the CHVs; however the knowledge among the CHVs in Kadibo Division, Kisumu County was unknown. In Kadibo Division, Kisumu County, the prevalence rate of cervical cancer remains unknown. In addition, information on the knowledge of CHVs on risk factors associated with cervical cancer was lacking. As such, the current study determined the knowledge about the risk factors associated with cervical cancer amongst CHVs in Kadibo Division, Kisumu County, Kenya.

### **2.3 Knowledge on Signs and Symptoms of Cervical Cancer**

A study to determine population knowledge, attitudes, and personal practices regarding prevention and early detection of cancer in upper-mid-western states, USA established that the knowledge of warning signs/symptoms of cancer was low (Bostick *et al.*, 1993). This was attributed to the fact that information about cervical cancer was still lacking and policies were just being put in place to encourage screening. It did not, however, extend to assess how such information was being accessed and its accuracy. This was supported by a study on cervical

cancer screening, knowledge and practices among Korean-American women which noted that the most frequently cited reason for not having had a Pap smear test was inability to identify the disease symptoms (Kim *et al.*, 1999). This study only targeted those advanced age group of 40-69 years ignoring the women of reproductive age. Although, it showed that education and the source of the health service are significant in possession of the relevant information, it did not explore the source of such information. Another study to determine knowledge about cervical cancer early warning signs and symptoms, risk factors and vaccination among students at a medical school in Al-Ahsa, Saudi Arabia, noted that a majority of the students were not aware of the early warning signs, symptoms and risk factors. On average, only 43.7% males and 56% of females were aware about the early signs and symptoms (Al-Darwish *et al.*, 2014). This study did well to assess the knowledge of the upcoming professionals; however it did not consider the fact that these professionals only have access to those already seeking health services. The current study therefore extended this approach to assess the knowledge of the CHVs in Kadibo Division, Kisumu County. Inability to identify the signs and symptoms is a hindrance to the uptake of the screening services, as was demonstrated amongst university students in Ghana whose poor knowledge was accompanied by poor screening habits (Binka *et al.*, 2016). This study showed that despite the fair perception about cervical cancer, knowledge was important in determining screening status of the participants. The study emphasized the need to pass accurate information to the community in order for them to seek screening services.

A study among the women of Zambia revealed that the women knew and understood very little about this disease and had the opinions of others who knew equally as little but were quite willing to speak out, judge, and reject (Maree and Kaila, 2014). This study exposed how lack of the right information can lead to stigma and discrimination, which in turn leads to poor health

seeking behaviours. This low knowledge about the signs and symptoms was also evident in a study in India where awareness about the cause, signs and symptoms, prevention of cervical cancer, PAP test and HPV vaccination was 3.6%, 6.3%, 3.6%, 9.5% and 14.5% respectively (Raychaudhuri and Mandal, 2012). Further findings from a study at Jaramogi Oginga Odinga Teaching and Referral Hospital Kisumu showed that knowledge on the signs and symptoms of cervical cancer was an important determinant for being screened for cervical cancer (Morema *et al.*, 2014). The previous studies above overlooked the role of community health volunteers in promoting health in the community through passage of the right information. It is on this background that the current study explored to address this knowledge gap by extending it to the community health volunteers. Such data collectively underscores the need for public education, which can be achieved by involving the CHVs to pass right information to the community. As such, the CHVs also need to be equipped with the most accurate information on the signs and symptoms of cervical cancer. Improved uptake of cervical cancer screening will enable the determination of prevalence rate in Kadibo Division, Kisumu County, which is currently unknown due to low screening rates. In addition, information on the knowledge about signs and symptoms of cervical cancer among CHVs was lacking. As such, the current study determined the knowledge about the signs and symptoms of cervical cancer in Kadibo Division, Kisumu County, Kenya among the CHVs.

#### **2.4 Knowledge on the Availability of Cervical Cancer Screening Services**

In Sri-Lanka a study among female health workers noted that 3% do not know about availability of the cervical cancer screening services and therefore do not seek screening. The study findings suggest that the knowledge and practices on cervical cancer screening methods among female health care workers need to be improved. Considering

the role that health care workers play in communicating health behaviours to the general public, strengthening health education interventions for this group of females is essential (Nilaweera *et al.*, 2012). This study was limited in scope since it only assessed knowledge among medical workers who are already trained on cervical cancer under the formal medical training and could not explain the low cervical cancer screening coverage. It does however give a pointer that the poor knowledge results in the low screening rates. This is in agreement with a study to determine cervical cancer awareness and cervical screening uptake at the Mater Misericordiae Hospital, Afikpo, Southeast Nigeria, which concluded that lack of awareness on availability of screening centres locally, cost and time were the main reasons adduced by respondents for not being screened (Eze *et al.*, 2012). Still a study among the rural and urban women of Nigeria established that the most important factors hindering the use of available cervical cancer screening services were lack of knowledge (49.8%) and the feeling that they had no medical problems (32.0%) (Nwankwo *et al.*, 2011). These two studies from Nigeria underscore the importance of the community being educated on the availability of the screening services if cervical cancer screening rates are to improve. Public education can be done effectively by the CHVs if they have the right information.

A study to determine the influence of partner communication on breast and cervical cancer screening and the perceived existing and potential support from male partners in participating in cancer screening in Mexican immigrants concluded that cervical cancer education is desperately needed, including education on the availability of free and low cost screening services (Thiel de Bocanegra *et al.*, 2009). This is supported by another survey to assess the knowledge of cervical cancer and use of cervical cancer screening facilities among women from various socioeconomic backgrounds in Durban, Kwazulu Natal, South Africa

where the majority of patients from lower socio-economic circumstances with multiple risk factors were not aware of cervical screening or facilities available for this purpose (Wellensiek *et al.*, 2002).

Furthermore, a study among college students in Ghana to determine their knowledge and beliefs about cervical cancer screening established that women were unaware of local screening initiatives and only 7.9% were aware of the link between HPV and cervical cancer. The most prevalent barriers were lack of awareness that the purpose of Pap screening is to diagnose cancer and lack of information about how to obtain screening services (Abotchie and Shokar, 2009). This low knowledge even among the literate segment of the society points to a weakness in the training curriculum coupled with the lack of policy on public education to pass information to the general community. This low knowledge level was also evident amongst the Sikkimese nursing staff in India with only one-third knowing when screening should start (Rahman and Kar, 2015).

In the previous studies above, no attempts were made to assess the knowledge of the community gatekeepers on the screening services available. In Kadibo Division, Kisumu County, information about the knowledge of CHVs about cervical cancer was lacking, as such, the current study determined the knowledge of CHVs about the availability of cervical cancer screening services in Kadibo Division, Kisumu County, Kenya.

## **2.5 Socio-Demographic Factors Affecting the Knowledge on Cervical Cancer**

A study amongst Students of the University of Medicine and Pharmacy of Tîrgu Mureş, Romania indicated that the knowledge about HPV infection among students in their first year of medical school was significantly lower compared to 6th year students, which suggests that some basic information was acquired throughout their years in medical school (Voidazan *et al.*, 2016).

This is an indication that the level of education significantly affects knowledge about cervical cancer. Further, a study among female students at Balıkesir University, Turkey showed that HPV knowledge score of the students attending the faculty of medicine was higher compared to the students attending other departments and their HPV vaccine knowledge score was higher compared to the students attending nursing and para-medics students (Yoruk *et al.*, 2016), this is an indication that occupation affects knowledge on cervical cancer. The previous studies (Voidazan *et al.*, 2016) and (Yoruk *et al.*, 2016), only assessed the socio-demographic factors affecting knowledge of the students who are still within the confines of the learning institution but did not extend to determine how these factors would change in the actual work environment during application of the knowledge acquired in the university.

A study amongst healthcare providers in Puerto Rico, revealed that knowledge about cancers in general varied with years of service and academic qualifications (Colon-Lopez *et al.*, 2016) where more years of service was associated with more experience therefore better knowledge while higher academic qualifications would also mean being more knowledgeable. On the other hand, study amongst Ethiopian healthcare workers found that, knowledge about cervical cancer risk factors and available screening services was significantly associated with occupation (Kress *et al.*, 2015), however, it did not determine which socio-demographic factors are associated with knowledge about the signs and symptoms of cervical cancer.

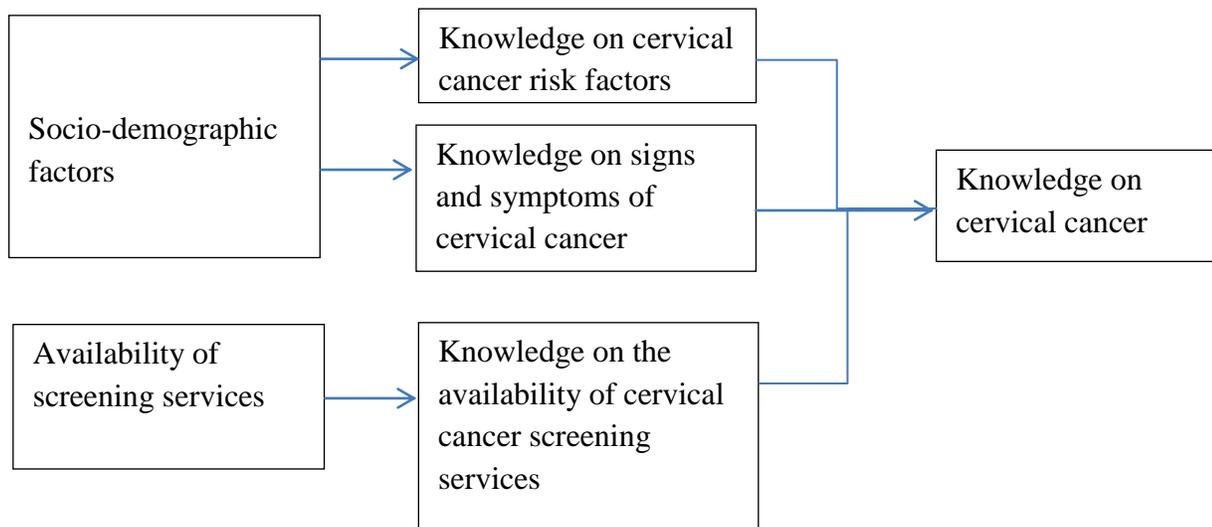
Another study among men in Kenya showed that knowledge about cervical cancer was significantly associated with education levels and demonstrated that higher education was associated with higher scores (Rosser *et al.*, 2014). In a study among the Acholi in northern Uganda, it was found that knowledge of cervical cancer varied by respondents' age and gender (Mwaka *et al.*, 2014). Older people and women were found to have better knowledge about

cervical cancer. Still, a study carried out in low income setting in China found that low income and illiteracy were two reliable factors affecting awareness before or after education intervention (Simayi *et al.*, 2013), this is similar to findings from China where a study amongst Chinese women found that educational base significantly affected knowledge on cervical cancer (Holroyd *et al.*, 2004).

In the previous studies above, no attempts were made to determine the socio-demographic factors affecting the knowledge of CHVs on cervical cancer. In Kadibo Division, Kisumu County, information about the socio-demographic factors affecting the knowledge of CHVs on cervical cancer was lacking, as such, the current study determined the socio-demographic factors affecting CHVs' knowledge on cervical cancer in Kadibo Division, Kisumu County, Kenya.

## **2.6 Conceptual Framework**

Socio-demographic factors like religion, traditional beliefs, occupation and education; availability of the cervical cancer screening services all affect knowledge levels and how people take care of their health (Thuler *et al.*, 2014). Knowledge level on the risk factors and signs and symptoms of cervical cancer is an important determinant for being screened for cervical cancer. Furthermore, women who do not know about the disease or are not aware about their susceptibility to it has a higher likelihood of not being screened (Morema *et al.*, 2014) as shown in Figure 2.1 below.



**Figure 2. 1: Conceptual framework. Adapted from Kaseje *et al.*, 2011 with modifications**

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Study Site**

The study was carried out in Kadibo Division, Kisumu County, which lies on latitudes  $-0.1959^0$  and longitudes  $34.8590^0$  (Appendix I). Kadibo Division has four government health facilities namely; Rabuor, Nyangande, Kanyagwal and Hongo Ogosa. All these facilities offer maternal and child health services among other medical services. Each facility has community units attached to it with each unit having 10 CHVs serving the households. The study site is in Nyando Sub County where, according to DHIS 2015, sexually transmitted infections accounted for 45.4% of the total cases attending special clinics in 2015. The prevalence of cervical cancer, however, remains unknown due to low screening rates with only opportunistic screening being observed at the health facilities. The study site however, boasts of functioning community units with active CHVs making it ideal for this study.

### **3.2 Study Design**

This was a cross-sectional study in which registered CHVs were interviewed about their knowledge on the risk factors, signs and symptoms and the availability of cervical cancer screening services. Since the required information could be collected through a one-time interview, the questionnaires for this study were administered to the CHVs only once.

### **3.3 Study Population**

The study population was the registered CHVs attached to the government health facilities in Kadibo Division, Kisumu County, Kenya. These CHVs are trained on a wide range of health issues including risk factors, signs and symptoms and the screening services available for cervical cancer. This initial training normally takes an average of two weeks followed by specific

shorter trainings based on needs and areas of interest. Their number according to DHIS 2014 and the facility records was 188. This was distributed as follows; Rabuor 50, Nyangande 89, Kanyagwal 19 and Hongo Ogosa 30. All these CHVs were included in the current study.

### **3.4 Sample Size Determination and Sampling Techniques**

Saturated sample was taken since they were all reachable in these facilities; therefore all the targeted 188 CHVs were included in the study.

### **3.5 Research Instrument**

The research instruments used was a semi-structured questionnaire. It was divided into four sections; section 1 was the demographic characteristics of the study participants, section 2 was questions on their knowledge about risk factors of cervical cancer, section 3 was questions on their knowledge about the signs and symptoms of cervical cancer and section 4 was questions on their knowledge about the cervical cancer screening services (Appendix III).

### **3.6 Construction of Data Collection Tools**

Based on the training CHVs' training manual for non-communicable diseases (NDC Module 13), questions relating to cervical cancer and the screening services were gathered and framed in a way understandable to the CHVs. The questions were also translated to the local language of Dholuo by a certified translator to enhance understanding.

### **3.7 Validity of Data Collection Tools**

The questionnaire was read through by the nurses who have insights on cervical cancer and the available screening services at the health facilities. Corrections were made taking into consideration their professional opinions and views. The questionnaire was then administered to

peer-educators who have almost similar qualifications as the CHVs in a pre-test exercise. This was to ensure that the questions were understandable and could be answered by the CHVs to give the information required in this study.

### **3.8 Reliability of Data Collection Tools**

A pilot study was done at Nyang'ande health centre amongst 19 CHVs attached to the facility because of the big number of the large number of CHVs attached to the facility. The response was then analysed to ensure that it reflected their wholesome knowledge about cervical cancer. The cut off for reliability was set at 70%.The Cronbach's coefficient alpha was then calculated and found to be 0.758.

### **3.9 Data Collection Procedure**

The research assistants, who had form four certificates and were conversant with the Dholuo language, were recruited and taken through a sit-in training session to administer the questionnaire then as part of the practical session, during the introduction to the health facilities, their administration of the questionnaire to the first participant was observed. After obtaining consent from the health facility in-charge, the research assistants approached the CHVs on duty, obtained their written consent (Appendix II) to participate in the study before administering the questionnaire (Appendix III). The research assistant read through the questions and the CHV answered without probing. Since there are normally two CHVs on duty every working day, the data collection was done for 45 days in Nyangande, 25 days in Rabuor, 15 days in Hongo Ogosa and 10 days in Kanyagwal.

### **3.10 Data Processing, Presentation and Analysis**

Filled questionnaires were checked for completeness and correctness then tallied and entered into excel spread-sheet before being exported to SPSS for analysis. This data was stored in password protected folders only accessible to the principal investigator, while the filled questionnaires were handed over to the principal investigator on a daily basis for storage under lock and key.

Participants' demographic characteristics were presented by use of median and inter-quartile range for continuous variables and percentages and frequencies for categorical variables. The knowledge level of cervical cancer was grouped based on percentage scores. The ordered categories of knowledge were in three levels, namely; low knowledge (<33% score), average knowledge (33-66% score) and high knowledge (>66% score). Knowledge level about risk factors and signs and symptoms of cervical cancer was presented by use of frequencies and percentages. The level of knowledge about screening services at health facilities was presented by use of percentages. Chi-square ( $\chi^2$ ) was used to determine which demographic characteristics were significant in determining the knowledge.

### **3.11 Ethical Consideration**

Authorization to carry out the study was obtained from Maseno University's School of Graduate Studies (SGS) (Appendix IV). Ethical approval was granted by the Maseno University Ethics Review Committee (MUERC) (Appendix V) and before recruitment into the study; the participants' written informed consent was also sought. The authority of the Kisumu County Health Management was also obtained at the county, sub-county and facility level (Appendix VI). Lastly, the confidentiality of the information and the anonymity of the participants was guaranteed. Access to data was limited to the principal investigator and the data was kept in locked cabinets and in files protected with passwords to enhance confidentiality.

## CHAPTER FOUR: RESULTS

### 4.1 Demographic Characteristics of the Study Participants

Majority of the participants 161(85.6%) were women with only 27(14.4%) being men, 37(19.7%) were 40-44 years old while 20-24 years old were the minority at 3(1.6%). The minimum age was 22 years with the maximum being 65 years. All had an education with 91(48.4%) having primary level of education, while 85(45.2%) had secondary level of education and only 12(6.4%) respondents had post-secondary level of education. All the respondents 188(100%) were Christians. Majority of the respondents 168(89.4%) were married, 18(9.6%) were separated with only 2(1.1%) saying that they were single/never married. Small scale farmers at 132(70.2%) were also a majority followed by 24(12.8%) who were in business, 21(11.2%) were manual labourer and 11(5.9%) engaged in commercial farming. The CHVs were distributed as follows; 89(47.3%) were attached to Nyangande, 50(26.6%) were from Rabuor, 30(16.0%) were from Hongo Ogoza with the least respondents being attached to Kanyagwal at 19(10.1%). The respondents were able to indicate the duration over which they had worked as CHVs of which 91(48.4%) had worked as CHVs for over 7 years, 70(37.2%) had worked for 5-7 years, 24(12.8%) between 2-4 years with the least 3(1.6%) working for less than 2 years (Table 4.1).

**Table 4. 1: Demographic Characteristics of the Study Participants**

<b>Respondent characteristics</b>		<b>Number of respondents</b>
Gender	Male	27 (14.4%)
	Female	161(85.6%)
Age (Years)	20-24	3(1.6%)
	25-29	13(6.9%)
	30-34	30(16.0%)
	35-39	26(13.8%)
	40-44	37(19.7%)
	45-49	30(16.0%)
	50-54	26(13.8%)
	55-59	13(6.9%)
	60-64	10(5.3%)
Education level	Primary	91(48.4%)
	Secondary	85(45.2%)
	Post-secondary	12(6.4%)
Religion	Christian	188(100%)
Marital status	Single	2(1.1%)
	Married	168(89.4%)
	Separated	18(9.6%)
Occupation	Small scale farming	132(70.2%)
	Commercial farming	11(5.9%)
	Business	24(12.8%)
	Casual laborer	21(11.2%)
Facility of attachment	Rabuor	50(26.6%)
	Nyangande	89(47.3%)
	Hongo Ogoza	30(16.0%)
	Kanyagwal	19(10.1%)
Years of service	<2	3(1.6%)
	2 – 4	24(12.8%)
	5 – 7	70(37.2%)
	>7	91(48.4%)

#### **4.2 Knowledge on Risk Factors Associated With Cervical Cancer**

For objective one, the respondents were asked to list the risk factors associated with cervical cancer, they were allowed to give multiple responses which were then scored and percentages worked out given the number of risk factors that a respondent was able to list. The percentages were stratified into three; low knowledge, average or high based on their percentage scores.

All the respondents 188(100%) indicated that they had heard about cervical cancer and correctly indicated that it affected women. It was established that majority of the respondents at 128(68.1%) had low knowledge on risk factors associated with cervical cancer with only 60(31.9%) recording average knowledge and none having high knowledge as shown in Table 4.2 below. The mean score for the participants was calculated as 30.83% (Min 0%, Max 66.67%, SD =0.897), this was interpreted as a low knowledge on risk factors associated with cervical cancer. The difference in the distribution of knowledge was statistically significant ( $p < 0.0001$ ).

Having many sexual partners was mentioned by 130(69.1%) respondents, HPV infection by 100(53.2%), and early onset of sexual activity by 99(52.7%). Immune suppression at 179(95.2%), having many children at 181(96.3%) and smoking at 185(98.4%) were wrongly identified as non-risk factors for cervical cancer as shown in Table 4.2 below.

**Table 4. 2: Knowledge on the Risk Factors Associated With Cervical Cancer**

	<b>Many children</b>	<b>Many sexual partners</b>	<b>Early onset of sexual activity</b>	<b>HPV infection</b>	<b>Smoking</b>	<b>Immune suppression</b>
<b>Yes</b>	7(3.7%)	130(69.1%)	99(52.7%)	100(53.2%)	3(1.6%)	9(4.8%)
<b>No</b>	181(96.3%)	58(30.9%)	89(47.3%)	88(46.8%)	185(98.4%)	179(95.2%)
<b>Total</b>	188(100%)	188(100%)	188(100%)	188(100%)	188(100%)	188(100%)
<b>Knowledge on risk factors</b>						
	<b>Low</b>	<b>Average</b>	<b>High</b>			
<b>Number of participants</b>	128(68.1%)	60(31.9%)	0(0%)			

### **4.3 Knowledge on Signs and Symptoms of Cervical Cancer**

The respondents were asked to list the signs and symptoms that are suggestive of cervical cancer, multiple responses were again allowed. The results were scored and percentages worked out given the number of signs and symptoms that a respondent was able to list. The percentages were stratified on a as low, average or high and the results are as shown in Table 4.4 below. Average 95(50.5%) had low knowledge, 15(8.0%) had average and 78(41.5%) had high knowledge. The mean score of the study participants was worked out as 58.75% (Min 0%, Max 100%, S.D = 1.285). This was interpreted as an average knowledge about signs and symptoms of cervical cancer. The difference in the distribution of the knowledge was found to be statistically significant ( $p < 0.0001$ ).

Majority of the respondents mentioned the following as the signs and symptoms of cervical cancer; abnormal vaginal bleeding at 114(60.6%), abnormal vaginal discharge at 115(61.2%), abdominal pains 99(52.7%) and pain during sexual intercourse by 90(47.9%). The results are shown in Table 4.3 below.

**Table 4. 3: Knowledge one Signs and Symptoms of Cervical Cancer**

	<b>Abnormal vaginal bleeding</b>	<b>Abnormal vaginal discharge</b>	<b>Abdominal pains</b>	<b>Pain during sexual intercourse</b>
<b>Yes</b>	114(60.6%)	115(61.2%)	99(52.7%)	90(47.9%)
<b>No</b>	74(39.4%)	73(38.8%)	89(47.3%)	98(52.1%)
<b>Total</b>	188(100%)	188(100%)	188(100%)	188(100%)
<b>Knowledge on signs and symptoms</b>				
	<b>Low</b>	<b>Average</b>	<b>High</b>	
<b>Number of participants</b>	95(50.5%)	15(8.0%)	78(41.5%)	

#### **4.4 Knowledge on the Availability of Screening Services at the Health Facilities**

The respondents answered questions on the various aspects of screening services offered at the health facilities with regards to the methods used, cost, the turn-around time and the rescreening interval. The percentage score for each respondent was worked out and used to stratify their knowledge. Some at 77(41.0%) had high knowledge followed by low knowledge at 71(37.8%) while 40(21.2%) had average knowledge. This is shown in Table 4.4 below. The mean score was worked as 59.27% (Min 0%, Max 86.67%, S.D = 0.612). This was interpreted as an average knowledge on screening services for cervical cancer. The difference in the distribution of the knowledge levels was statistically significant ( $p < 0.0001$ ).

It was established that all the respondents at 188(100.0%) knew that the screening services were available at the health facilities where they were attached, however, they did not have the right information with respect to the screening methods used with only 40(21.3%) and 37(19.7%) correctly identifying VIA and VILI as the methods being used, respectively. Majority at 174(92.6%) correctly mentioned that the services were being offered free of charge, however, the

turn-around time for the screening tests and the retesting interval was only known by 69(36.7%) and 3(1.6%) respectively. This is as shown in Table 4.4 below.

**Table 4. 4: Knowledge about the Availability of Screening Services at the Health Facilities**

Screening services components		Respondents		
<b>Screening methods used</b>	VIA	40(21.3%)		
	VILI	37(19.7%)		
	Pap smear	72(38.3%)		
	HPV testing	39(20.7%)		
<b>Cost</b>	Free	174(92.6%)		
	< Ksh. 100	3(1.6%)		
	>Ksh. 100	11(5.9%)		
<b>Turn-around time</b>	<30 Min.	69(36.7%)		
	30 – 60 Min	112(59.6%)		
	>60 Min	6(3.7%)		
<b>Retesting interval</b>	Semi-annually	92(48.9%)		
	Annually	90(47.9%)		
	Every 5 years	3(1.6%)		
	Over 5 years	3(1.6%)		
<b>Knowledge on availability of cervical cancer screening services</b>				
	<b>Low</b>	<b>Average</b>	<b>High</b>	
<b>Number of participants</b>	71(37.8%)	40(21.2%)	77(41.0%)	

#### **4.5 Socio-Demographic Factors Affecting Knowledge on Cervical Cancer**

The gender, religion, marital status and years of work of the respondent were not significant in explaining the variation in knowledge on the risk factors among the CHVs. Age of the respondents was important in explaining the difference in knowledge on whether early onset of

sex is a risk factor for cervical cancer or not, ( $p=0.001$ ). The education of the respondent was also important in explaining whether the respondents knew that immune suppression is a risk factor or not, ( $p=0.001$ ). The occupation of the respondents was a determinant as to whether the respondent knew whether early onset of sexual activity is a risk factor or not, ( $p<0.0001$ ). The health centre in which a CHV was attached to was a determinant on whether they knew that many sexual partner ( $p<0.0001$ ), early onset of sexual activity ( $p<0.0001$ ) HPV infection ( $p<0.0001$ ) and immune suppression ( $p=0.001$ ) are risk factors.

Overall knowledge about the risk factors associated with cervical cancer were determined by education ( $p=0.012$ ,  $\chi^2=3.839$ ), occupation ( $p<0.0001$ ,  $\chi^2=12.722$ ), and health centre of attachment ( $p<0.0001$ ,  $\chi^2=71.013$ ) as shown in Table 4.5 below.

**Table 4. 5: Socio-Demographic Factors Affecting Knowledge on Risk Factors Associated With Cervical Cancer**

Demographic characteristic	Df	Many children (p value)	Many sexual partners (p value)	Early onset of sexual activity (p value)	HPV infection (p value)	Smoking (p value)	Immune suppression (p value)
Gender	1	0.269	0.229	0.356	0.272	0.475	0.096
Age	3	0.148	<b>0.003</b>	0.290	0.650	0.411	0.292
Education	2	0.465	0.517	0.728	0.310	0.800	<b>0.001</b>
Marital status	2	0.214	0.337	0.965	0.313	0.367	0.940
Occupation	3	0.093	<b>0.008</b>	<b>0.0001</b>	0.270	0.374	0.617
Health centre	3	0.399	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	0.584	<b>0.001</b>
Duration worked	3	0.177	0.386	0.065	0.060	0.355	0.114
<b>Demographic characteristics</b>							
	<b>Gender</b>	<b>Age</b>	<b>Education</b>	<b>Marital status</b>	<b>Occupation</b>	<b>Health centre attached</b>	<b>Duration worked</b>
<b>Knowledge on risk factors (p value)</b>	0.929	0.124	<b>0.012</b>	0.059	<b>0.0001</b>	<b>0.0001</b>	0.059
<b>Knowledge on risk factors (<math>\chi^2</math> values)</b>	0.520	5.518	3.839	1.789	12.722	71.013	1.581

It was established that there was no significant relationship between knowledge about signs and symptoms of cervical cancer and gender, age, education, marital status and the health centre of attachment of the CHVs. Nonetheless, the occupation of the respondent was found to be significantly related to the knowledge on whether abdominal pains ( $p=0.002$ ) and pain during sex ( $p=0.003$ ) were signs and symptoms of cervical cancer or not while years of work as a CHV was significantly related to knowledge of abnormal vaginal discharge as a sign and symptom of cervical cancer ( $p=0.003$ ).

However, the overall knowledge on the signs and symptoms of cervical cancer were determined by the occupation of the CHVs ( $p=0.030$ ,  $\chi^2=15.110$ ) and the years of work as a CHV ( $p=0.014$ ,  $\chi^2=8.451$ ) as shown in Table 4.6 below.

**Table 4. 6: Socio-Demographic Factors Affecting Knowledge on Signs and Symptoms of Cervical Cancer**

Demographic characteristics	Df	Abnormal vaginal bleeding (p value)	Abnormal vaginal discharge (p value)	Abdominal pains (p value)	Pain during sex (p value)		
Gender	1	0.353	0.263	0.283	0.423		
Age	3	0.189	0.787	<b>0.035</b>	1.114		
Education	2	0.130	0.547	0.907	0.429		
Marital status	2	0.824	0.203	0.292	0.495		
Occupation	3	0.075	0.243	<b>0.002</b>	<b>0.003</b>		
Health centre attached	1	0.263	0.283	0.928	0.423		
Duration worked	3	0.725	<b>0.030</b>	0.941	0.915		
	<b>Gender</b>	<b>Age</b>	<b>Education</b>	<b>Marital status</b>	<b>Occupation</b>	<b>Health centre</b>	<b>Duration worked</b>
<b>Knowledge on signs and symptoms (p value)</b>	0.263	0.239	0.446	0.332	<b>0.030</b>	0.060	<b>0.014</b>
<b>Knowledge on signs and symptoms (<math>\chi^2</math> value)</b>	0.171	14.175	9.140	1.783	15.110	86.472	8.451

Gender of the CHVs was significant in determining the knowledge on the cost of screening ( $p=0.004$ ), while age was important in determining knowledge on use of VILI as a screening method ( $p=0.003$ ) and the TAT ( $p=0.008$ ). the level of education was important in determining knowledge on use of VILI ( $p=0.035$ ) and VIA ( $p=0.007$ ) while occupation was significant in

determining the knowledge about use of VIA ( $p=0.004$ ) and VILI ( $p=0.008$ ) and the TAT ( $p=0.050$ ). Finally, the health centre of attachment was important in determining knowledge on the use of VIA ( $p<0.0001$ ) and VILI ( $p<0.0001$ ), the cost of screening ( $p=0.001$ ), TAT ( $p=0.001$ ) and the frequency of screening ( $p<0.0001$ ) while the duration of work was significant in determining the knowledge about use of VIA ( $p=0.014$ ), the cost of screening ( $p<0.0001$ ), TAT ( $p=0.018$ ) and the frequency of screening ( $p=0.003$ ).

Education ( $p=0.011$ ,  $\chi^2=8.605$ ), occupation ( $p=0.002$ ,  $\chi^2=18.335$ ) and health centre of attachment ( $p<0.0001$ ,  $\chi^2=101.705$ ) were significant in determining the knowledge on availability of screening services at the various health facilities. This is shown in Table 4.7 below.

**Table 4. 7: Socio-Demographic Factors Affecting Knowledge on Availability of Cervical Cancer Screening Services**

Demographic characteristics	VIA (p value)	VILI (p value)	Cost of screening (p value)	TAT (p value)	Frequency of screening (p value)		
<b>Gender</b>	0.169	0.449	<b>0.004</b>	0.401	0.709		
<b>Age</b>	0.148	<b>0.003</b>	0.820	<b>0.008</b>	0.604		
<b>Education</b>	<b>0.035</b>	<b>0.007</b>	0.494	0.402	0.374		
<b>Marital status</b>	0.324	0.447	0.253	0.161	0.984		
<b>Occupation</b>	<b>0.004</b>	<b>0.008</b>	0.088	0.050	0.108		
<b>Health centre attached</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.001</b>	<b>0.001</b>	<b>0.0001</b>		
<b>Duration worked</b>	<b>0.014</b>	0.495	<b>0.0001</b>	<b>0.018</b>	<b>0.003</b>		
	<b>Gender</b>	<b>Age</b>	<b>Education</b>	<b>Marital status</b>	<b>Occupation</b>	<b>Health center</b>	<b>Duration worked</b>
<b>Knowledge on availability of screening (p value)</b>	0.283	0.055	<b>0.011</b>	0.292	<b>0.002</b>	<b>0.0001</b>	0.271
<b>Knowledge on availability of screening (<math>\chi^2</math> value)</b>	19.792	14.711	8.605	4.470	18.335	101705	6.558

## CHAPTER FIVE: DISCUSSION

All the CHVs interviewed had heard about cervical cancer but still had low knowledge about its risk factors. The risk posed by immune suppression and smoking were the least known, despite their growing prevalence. Knowledge about the signs and symptoms was found to be average; however, CHVs being gate keepers in their respective communities need to have high knowledge. The knowledge on the availability of screening services was also found to be average. Despite of the CHVs' knowledge on the screening services availability in the health facilities, the details on methods used, turn-around time and screening intervals was lacking. Finally, occupation, level of education, years of service as a CHV were found to significantly affect knowledge about cervical cancer.

### 5.1 Knowledge on the Risk Factors Associated With Cervical Cancer

This study established that there was low knowledge on the risk factors of cervical cancer. This was in agreement with the findings of other studies (Bosch *et al.*, 2006) which established that Vietnamese American women were unable to correctly identify the cervical cancer risk factors. Similarly, (Mutyaaba *et al.*, 2006) in Uganda noted that the knowledge among medical workers was low at less than 40% while (Marlow *et al.*, 2007) found that the awareness of human papillomavirus (HPV) as risk factor of cervical cancer was at a very low percentage of 2.5%. In addition, other studies (Gawdzik *et al.*, 2015) and (Kress *et al.*, 2015) also demonstrated low knowledge on risk factors amongst the women in Wielkopolska region and Ethiopian health care workers, respectively.

This low knowledge level can be attributed to the generally low education levels which also have a bearing on the occupation of the CHVs and the kind of information the CHVs interest themselves in. Cervical cancer screening has also been neglected by the health workers and the

policy makers especially in the developing countries even though it is an important component of maternal health; this also contributed to the low knowledge. There is need therefore to train the CHVs on the risk factors of cervical cancer since through them, the information can be passed to the community. With the emergence of other non-communicable diseases like diabetes which leads to loss of immunity thereby increasing the risk of cervical cancer development, the CHVs need to be trained regularly to keep up with the emerging information on risks factors.

## **5.2 Knowledge on the Signs and Symptoms of Cervical Cancer**

The knowledge on signs and symptoms of cervical cancer among the CHVs was found to be average. These findings diverge with those from earlier studies (Bostick *et al.*, 1993) which pointed to low knowledge of warning signs and symptoms of cervical cancer amongst study participants in the upper mid-western states, USA and (Raychaudhuri and Mandal, 2012) which established that the knowledge on the signs and symptoms of cervical cancer was as low as 6.3% amongst participants in North Bengal, India. Similarly, (Al-Darwish *et al.*, 2014) observed a lack of knowledge on the signs and symptoms of cervical cancer amongst students at a medical school in Al-Ahsa, Kingdom of Saudi Arabia.

The average knowledge observed could be due to the on-going sensitization in the audio-visual media which mainly focuses on passing of information on the signs and symptoms to lookout for but neglects other aspects. Fliers to encourage cervical cancer screening mainly carry information about the signs and symptoms, the media campaigns only highlight the signs and symptoms to look out for thus the significant difference between the current study and the previous studies.

Emergence of new conditions and diseases with similar signs and symptoms would mean confusion in identifying those caused by cervical cancer, there is need therefore to constantly train and refresh the CHVs to keep up with the emerging changes.

However, the disparity between the high and low knowledge needs to be investigated to in order to determine and address the underlying issues leading to such disparities.

### **5.3 Knowledge on the Availability of Cervical Cancer Screening Services**

The knowledge about availability of screening services was found to be average, however, it was evident that majority of the CHVs were not aware of the screening methods available and the duration of time the screening takes. This was consistent with the findings of (Daley *et al.*, 2013) where the purpose and importance of a pap smear was not well understood amongst the high risk women studied while (Nilaweera *et al.*, 2012) established that 3% of female health workers did not know about availability of the services and therefore did not seek screening, and were therefore likely to pass wrong information to the community. Furthermore, (Abotchie and Shokar, 2009; Eze *et al.*, 2012; Lim and Ojo, 2016) established that lack of awareness on availability of screening centres locally, cost and time were the main reasons adduced by respondents for not being screened. This inadequate knowledge means that the information passed to the community members is largely inaccurate and insufficient as reflected by the low screening rates.

The low score on the methods of screening, the duration it takes and retesting interval was found to be low due to lack of refresher and more focused training for the CHVs on the details of the screening services available. However the high score on cost can be explained by the fact that all the services at the government health centres and dispensaries are currently free of charge.

This average knowledge on availability of cervical cancer screening services however is not sufficient for gate keepers that CHVs are and therefore there is need for their training and sensitization to pass accurate and consistent information to the community.

#### **5.4: Socio-Demographic Factors Affecting the Knowledge on Cervical Cancer**

Level of education ( $p=0.012$ ), occupation ( $p<0.0001$ ), and the facility of attachment ( $p<0.0001$ ) were found to significantly affect knowledge about risk factors associated with cervical cancer. This was similar to findings by (Rosser *et al.*, 2014; Voidazan *et al.*, 2016; Yoruk *et al.*, 2016) which found level of education and occupation to significantly affect knowledge on cervical cancer. CHVs with just primary level education had better knowledge about the risk factors associated with cervical cancer than those with higher education. This is an indication that the formal education does not give more information about cervical cancer risk factors therefore need for more trainings of the CHVs. The CHVs involved in small scale farming were also found to have better knowledge. Lack of uniform trainings for the CHVs through health talks and continuous medical education on the risk factors associated with cervical cancer in the various health facilities explains why the health facility of attachment was a significant determinant of the knowledge of CHVs about cervical cancer. Rabuor had the most consistent series of health talks and this has an effect on the scores obtained by the CHVs attached to these centres.

Occupation ( $p=0.030$ ) and duration of service as a CHV ( $p=0.014$ ) were found to be significant in determining the knowledge about signs and symptoms of cervical cancer as was also found by (Kress *et al.*, 2015; Colon-Lopez *et al.*, 2016; Yoruk *et al.*, 2016). CHVs who practise small scale farming were found to be more knowledgeable, just like those who had served for more than 5 years as CHVs. With more years of service, the CHVs gain experience and more information from their interaction with the health care workers and within themselves.

The knowledge on availability of screening services was significantly related to the level of education ( $p=0.011$ ), similar to findings by (Holroyd *et al.*, 2004; Simayi *et al.*, 2013). The CHVs with post-secondary education were found to have better knowledge. This could be alluded to the complexity of the details of the screening methods which require more brain power to comprehend. Occupation ( $p=0.002$ ) was also significant in determining knowledge on availability of cervical cancer screening services. This was similar to findings of (Simayi *et al.*, 2013; Kress *et al.*, 2015; Yoruk *et al.*, 2016) who also found occupation to significantly affect knowledge on cervical screening. Those CHVs practising small scale farming and casual labourer were found to be more knowledgeable. Occupation generally have a bearing on the kind of information a person vests their interest in. Finally, the health facility of attachment ( $p<0.0001$ ) was also significant in determining the knowledge about the availability of cervical cancer screening services in the respective health facilities. CHVs attached to Kanyagwal were also knowledgeable about screening services since because of their small number, they have more contact with the technical staff offering the services thus better exposure to such information.

## CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Conclusions

1. For the first specific objective, the community health volunteers were found to have low knowledge on the risk factors associated with cervical cancer. There was notable misinformation among the CHV in so far as risk factors for cervical cancer are concerned. It is important that the CHVs possess the right information about the risk factors to pass to the community if uptake of screening services is to improve.
2. For the second objective, the CHVs were found to have average knowledge about the signs and symptoms of cervical cancer however; some signs and symptoms were not known by majority of the respondents. Being the community gate keepers, average knowledge is not sufficient to pass enough information to the community since it will result in mal-informed community. There is need therefore to enlighten the CHVs on the signs and symptoms of cervical cancer.
3. For the third objective, the CHVs were found to have average knowledge about the screening services that were available in the health facilities. The CHVs had inaccurate information with regard to the availability of the various screening methods at the facilities, how long it takes to have screening done and the rescreening interval. This knowledge gap needs bridging through training of the CHVs.
4. Lastly, for the fourth objective, the following were found to significantly influence the knowledge of CHVs about cervical cancer; level of education, occupation, health facility of attachment and years of service as a CHV.

## **6.2 Recommendations from the Study**

1. There is need for a more focused training of the CHVs in Kadibo Division, Kisumu County on the risk factors of cervical cancer to enable them carry out effective public education. This will ensure that they pass accurate information to the community.
2. There is need to train and sensitize the CHVs from Kadibo Division, Kisumu County on the signs and symptoms of cervical cancer since some symptoms are not known to majority of the respondents. This will ensure that adequate information is passed to the community.
3. There is need to train and sensitize the CHVs from Kadibo Division, Kisumu County on screening services available in the government health facilities. This will enable them to give accurate information to the women and encourage uptake of cervical cancer screening.
4. The following socio-demographic factors should be taken into account when training the CHVs about cervical cancer; their level of education, occupation, the health facility one is attached to and their years of service as a CHV.

## **6.3 Recommendations for Future Studies**

1. The CHVs need to be trained on cervical cancer and their knowledge levels evaluated following successful completion of the training.
2. There is need to assess the cervical cancer screening rates, pre- and post-intervention of the trained CHVs.

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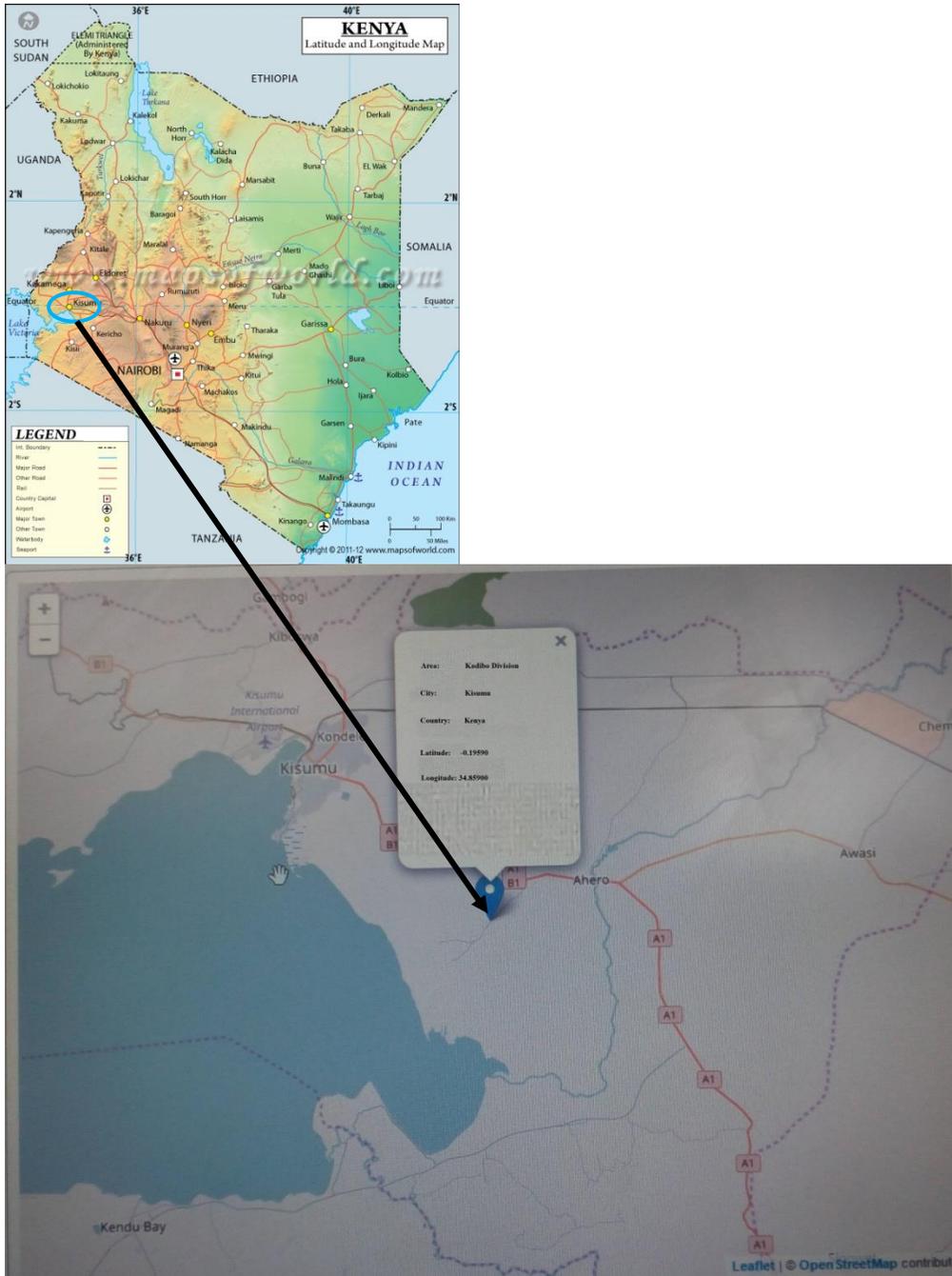
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# APPENDICES

## Appendix I: Study Area



Map 1: Study location – Kadibo, Kisumu County

## **Appendix II: Informed Consent Form for the Respondents**

The Researcher's name is Edwin Ochomo, a student at Maseno University studying for Masters' Degree in Public Health. I am currently carrying out this study: - Assessment community health volunteers' knowledge cervical cancer in Kadibo, Kisumu County, Kenya. The purpose of this study is to collect data that will establish the knowledge levels of CHVs about the risk factors, signs and symptoms and screening services availability for cervical cancer in the division. The results of this study will be used to inform policy makers on the viability of using CHVs to promote Cervical Cancer Screening Programs and also serve as a baseline for use of CHVs to scale up screening services.

You have been identified to participate in this study and are kindly requested to consent and spare 20 minutes of your time to take this interview with the Researcher / Research assistant.

I wish to assure you that the data being collected in this study will be used for the purpose intended.

In case of any questions, contact the principal investigator: Edwin O. Ochomo +254721257720

Additional queries should be directed to Maseno University Ethical Review Committee on phone number + 254 57 351 622 EXT. 3050

### *LUO VERSION*

*Nonroni itimo gi Edwin Ochomo, matiegore e mbalariany ma Maseno eranginy mar Masta engima mar oganda. Nonro masani temo pimo okang mar ngeyo mar nyamrerwa kaluwore gi tuo mar ningu mamako dho ofuk nyodo mar jomamine ei Kadibo, kaunti ma Kisumo, Kenya. Duoko mar nonroni ibitigo ngadone tend kaonti riek e loso chenro mar tiego nyamreche mondo osir pimo mar ningu.*

*Oseyieri kaka achiel kuom jomitimogodo nonro, akwai mondo iyiena kuom thuoloni mar dakika 20, iduoke penjogi kikonyori gi jataa nonro.*

*Asingoni ni duoko mimiyowa ibitigo e nonro ni kende eyoo mowinjore.*

*Kuom penjo moro amora tudri kod ja nonro: Edwin O. Ochomo +254721257720, kata Maseno*

*University Ethical Review Committee + 254 57 351 622 EXT. 3050*

Community unit (Gweng): \_\_\_\_\_

Signature (Sei): \_\_\_\_\_

Date (Tarik): \_\_\_\_\_

## Appendix II: Study Questionnaire for the Respondents

### SECTION 1: DEMOGRAPHICS

1.1 Participant Gender (*Miyo kata dichuo*)

- Male
- Female

1.2 Age of participant in years (*Hik ja duoko*) .....

1.3 What is the highest level of Education attained? (*Somb jaduoko*)

- Primary
- Secondary
- Post-Secondary
- No Education

1.4 Which Religion do you belong to? (*Dini mar jaduoko*)

- Christian
- Muslim
- Others
- No religion

1.5 What is your marital status? (*Chal mar keny*)

- Single/Never Married
- Married/Living as Married
- Divorced/Widowed/Separated

1.6 What do you do for a living? (*Tich ma jaduoko timo*)

- Small scale farming
- Commercial farming
- Business/Other
- Salaried worker
- Casual Worker

1.7 Which health centre are you attached to? (*Kar dhieth mitudorigo*)

- Rabuor
- Nyangande
- Hongo ogosa
- Kanyagwal

1.8 Length of duration worked as a CHV in years (*Isetiyo tij nyamrerwa kuom higni adi*).....

## **SECTION 2: KNOWLEDGE ON RISK FACTORS**

2.1 Have you ever heard of cervical cancer? (*Be isewinjo ningu mar dhoo ofuku mar nyodo*)

- Yes
- No

2.2 From your own point of view, which gender do you think is affected with cervical cancer? (*Iparoni ninguni mako jomage ekind mine kod chuo*)

- Male
- Female

2.3 Kindly list any risk factors associated with cervical Cancer? (*Angoma nyalo kelo ninguni*)

(*Check all that the respondent answers*)

- Having many children
- Having many sexual partners
- Early onset of sexual activity
- HPV infection
- Smoking
- Immune suppression

### **SECTION 3: KNOWLEDGE ON SIGNS AND SYMPTOMS**

3.1 Do you know of any signs and symptoms of cervical cancer? (*Bende ingeyo ranyisi mangiso ni ngato nigi ninguni*)

- Yes
- No

3.2 Kindly list the signs and symptoms that are suggestive of cervical cancer? (*Ranyisi mage mangiso ni ngato nigi ninguni*)

(*Check all answers given*)

- Abnormal vaginal bleeding
- Abnormal vaginal discharge
- Abdominal pains
- Pain during sex

## SECTION 4: KNOWLEDGE OF AVAILABILITY OF SCREENING SERVICES

4.1 Do you think cervical screening services are available in the health centre where you are attached to? (*Bende pimo mar ningu timore e osiptal kamae itudorigo*)

- Yes
- No (*if No skip to end of section 4*)

4.2 If **YES** above, kindly list the screening methods are available in the facility you are attached to? (*Yore mage mag pimo mayudore e osiptal mitudorigo*)

- VIA
- VILI
- Pap-smear
- HPV testing

4.3 What is the cost of screening at the health facility? (*pimo mar ningu kao pesa adi e osiptal mitudorigo*)

- Free
- Less than KSH. 100
- More than KSH. 100

4.4 How long does the screening take? (*Pimoni kao muda marom nade*)

- Less than 30 Min
- 30 – 60 Min
- More than 60 Min

4.5 At what frequency should one go for the routine screening? (*Ethuolo marom nade monego bedni ngato ipimo*)

- Semi – annually
- Annually
- Every 5 years
- After 5 years

**Thank you for your time! (*Erokamano kuom thuoloni*)**

**Appendix IV: Research Approval from School of Graduate Studies, Maseno University**



**MASENO UNIVERSITY  
SCHOOL OF GRADUATE STUDIES**

*Office of the Dean*

**Our Ref:** PG/MPH/00066/2013

Private Bag, MASENO, KENYA  
Tel:(057)351 22/351008/351011  
FAX: 254-057-351153/351221  
Email: [sgs@maseno.ac.ke](mailto:sgs@maseno.ac.ke)

Date: 07<sup>th</sup> August, 2015

**TO WHOM IT MAY CONCERN**

**RE: PROPOSAL APPROVAL FOR EDWIN OCHOMO ONYANGO—  
PG/MPH/00066/2013**

The above named is registered in the Master of Public Health Programme of the School of Public Health & Community Development, Maseno University. This is to confirm that his research proposal titled "Assessing Community Health Volunteers' Knowledge Levels on Cervical Cancer in Kadibo Division, Kisumu County" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.

07 JUL 2015

  
Prof. P.O. Owuor  
DEAN, SCHOOL OF GRADUATE STUDIES

*Maseno University*

*ISO 9001:2008 Certified*



## Appendix V: Ethical Approval from Maseno University Ethics Review Committee



**MASENO UNIVERSITY ETHICS REVIEW COMMITTEE**

Tel: +254 057 351 622 Ext: 3050  
Fax: +254 057 351 221

Private Bag – 40135, Maseno, Kenya  
Email: [muerc-secretariate@maseno.ac.ke](mailto:muerc-secretariate@maseno.ac.ke)

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**FROM:** Secretary - MUERC

**DATE:** 2<sup>nd</sup> November, 2015

**TO:** Edwin Onyango Ochomo  
PG/MPH/00066/2013  
Department of Public Health  
School of Public Health and Community Development, Maseno University  
P. O. Box, Private Bag, Maseno, Kenya

**REF:** MSU/DRPI/MUERC/00222/15

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**RE: Assessing Community Health Volunteers' Knowledge Levels on Cervical Cancer in Kadibo Division, Kisumu County. Proposal Reference Number MSU/DRPI/MUERC/00222/15**

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This is to inform you that the Maseno University Ethics Review Committee (MUERC) determined that the ethics issues raised at the initial review were adequately addressed in the revised proposal. Consequently, the study is granted approval for implementation effective this 2<sup>nd</sup> day of November, 2015 for a period of one (1) year.

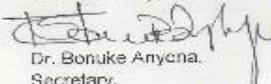
Please note that authorization to conduct this study will automatically expire on 1<sup>st</sup> November, 2016. If you plan to continue with the study beyond this date, please submit an application for continuation approval to the MUERC Secretariat by 2<sup>nd</sup> October, 2016.

Approval for continuation of the study will be subject to successful submission of an annual progress report that is to reach the MUERC Secretariat by 2<sup>nd</sup> October, 2016.

Please note that any unanticipated problems resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to this study to MUERC for review and approval prior to initiation. Please advise MUERC when the study is completed or discontinued.

Thank you.

Yours faithfully,

  
Dr. Bonuke Anyona,  
Secretary,  
Maseno University Ethics Review Committee.



Cc: Chairman,  
Maseno University Ethics Review Committee.

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MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED 

**Appendix VI: Research Approval from the Ministry of Health, County Government of Kisumu**

**COUNTY GOVERNMENT OF KISUMU**

Telegram: "PROHEALTH"  
Tel: 254-057-2020100  
Fax: 254-057-2025170  
E-mail: [kisumoh@cgak.or.ke](mailto:kisumoh@cgak.or.ke)



County Director of Health,  
Kisumu,  
P. O. Box 721-40100,  
KISUMU

**MINISTRY OF HEALTH**

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REF: \_\_\_\_\_ Date: 5<sup>th</sup> November, 2015

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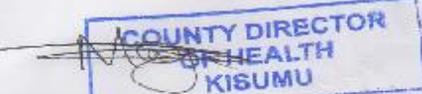
The Sub County MOH  
Nyando Sub County  
Kisumu County

*Approved! DPHN  
RDB  
SCMOH  
19/11/2015*

**RE: APPROVAL TO CARRY OUT A STUDY – ASSESSING COMMUNITY HEALTH VOLUNTEERS' KNOWLEDGE LEVELS ON CERVICAL CANCER IN THE HEALTH FACILITIES IN KADIBO, KISUMU COUNTY**

This is to authorize Mr. Edwin Ochomo of ID No. 24618957 to carry out the above mentioned study amongst the community health volunteers attached to the health facilities mentioned above.

Please accord him all the necessary cooperation.

  
**COUNTY DIRECTOR OF HEALTH KISUMU**

Dr. Dickens Onyango  
County Director of Health  
**KISUMU COUNTY**

*Noted & the officer to give feedback upon completion of the study  
A. S. Mwangi  
DPHN*



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*From the Office of Director of Health*